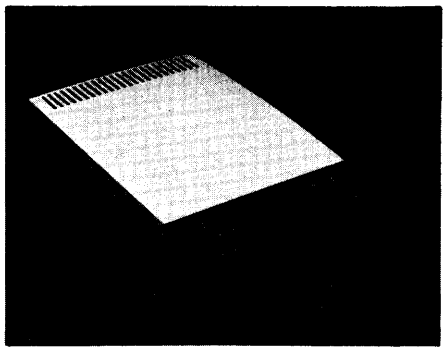
DATAPOINT
Product Specifications

Multiple Port Communications Adaptor

9460/9462



The 9460/9462 Multiple Port Communications Adaptor.

May 9, 1980 Document no. 60171

Copyright© 1980 by Datapoint Corporation. "All Rights Reserved". Printed in U.S.A.

The "D" logo and Datapoint are trademarks of Datapoint Corporation, registered in the U.S. patent office.

1.0 General Description

The 9462 Multiple Port Communications Adaptor interfaces the Datapoint processor with up to eight external devices which use serial asynchronous start-stop data and EIA Standard RS-232 voltage interface.

The 9462 is an upgraded version of the 9460 Multiple Port Communications Adaptor and can be used in all applications and systems where the 9460 is used. In addition, the following features are included in the 9462:

- Input/Output System compatibility with Datapoint small-screen processors.

- Inclusion of a status bit for the "Dataset Ready" signal for each of the eight ports.

- Separate transmit and receive baud rates.

The 9462 is assigned a unique address and attaches directly to the processor I/O bus. The character length and number of stop bits are selected for each port independently via program control. The selected number of start and stop bits are then automatically added to and subtracted from transmitted and received data respectively.

1.1 Asynchronous Communications Format

In serial asynchronous communications, each character consists of one "start" bit, up to 8 data bits, and one or two stop bits.

Using this format, characters can be transmitted without regard to frequency of sending. Characters can be sent occasionally or packed one after the other. The start and stop bits provide complete identification for each character. The baud rate must be equal at the sending and receiving devices.

2.0 System Requirements

2.1 Unit Compatability

The Multiple Port Communications Adaptor connects directly to the Datapoint processor by the Universal I/O cable. Power for the Adaptor is supplied by the Datapoint processor and up to two 9462's can be operated in this manner. External power must be provided for operation of more than two of the Multiple Port Adaptors.

2.2 System Configuration

The 9462 may be configured with a variety of serial devices. Listed in Table 2-1 are the most common configurations for the 9462. A more detailed description of these configurations is given in section 6.0, Interface Requirements.

9462 to 103A Modem
9462 to 103F or 202T Modem
9462 to Printer (9292)
9462 to Comm Interface (9400)
9462 to UDS-202C Modem
9462 to 9462
3601 (3600-100) to 9462
3601 (3600-100) with Printer to 9462
3502 (3360-102) to 9462
3602 to 9462

Table 2-1

3.0 Technical Description

3.1 Technical Specifications

Power required (By Datapoint Processor):	+12VDC at .25 amps -12VDC at .25 amps +5VDC at 2.5 amps 30 WATTS total	
Number of I/O ports:	8	
Data Levels:	RS232C compatible	
Baud Rates:*	9460	9462
	110, 220, 300, 440, 600, 880, 1200, 1760, 2400, 3520, 4800, 7040, 9600	110, 150, 220, 300, 440, 600, 880, 1200, 1760, 2400, 3520, 4800, 7040, 9600
Method of Data Transfer:	Asynchronous Serial Data	
Standard Codes used:	BINARY, ASCII, EBCDIC, and Baudot	
Character Length:	5 to 8 Data Bits	
Number of Start Bits:	1	
Number of Stop Bits:	1 or 2	

*The transmit and receive baud rates may be set at different speeds on the 9462. The standard baud rates used for the 9460 are 110, 300 and 1200. The standard rates for the 9462 are 150, 1200, and 9600.

Multiple Port Communications Adaptor

9460/9462

Continued....

3.2 Programming Requirements

3.2.1 Functional

The Datapoint 9462 Communications Adaptor operates under program control with the word length and number of stop bits being selected by loading a command word. By checking status, the processor program can determine when data has been received and transmitted by each port. A block diagram of the 9462 is shown in Figure 3-1.

3.2.2 Addressing

The Adaptor is factory assigned an address of 151 octal. This address can be easily changed in the field by rearranging jumpers. (Refer to the apropriate processor reference manual for a table of permissible addresses.) The Adaptor is addressed by issuing an EX ADR Command with the correct address in the A Register.

After the 9462 is addressed, communication with a particular port is accomplished by individually addressing that port. The eight ports are assigned unique addresses (0-7) and are selected by issuing an EX COM3 Command with the desired port address in the A Register. The low order three bits are used to specify the port address. The selected port remains addressed until the next EX COM3 command is received.

Note that port addresses 0-7 correspond to physical (external connector labels) port numbers 1-8. Address 0 corresponds to physical port 1 and address 7 corresponds to physical port 8.

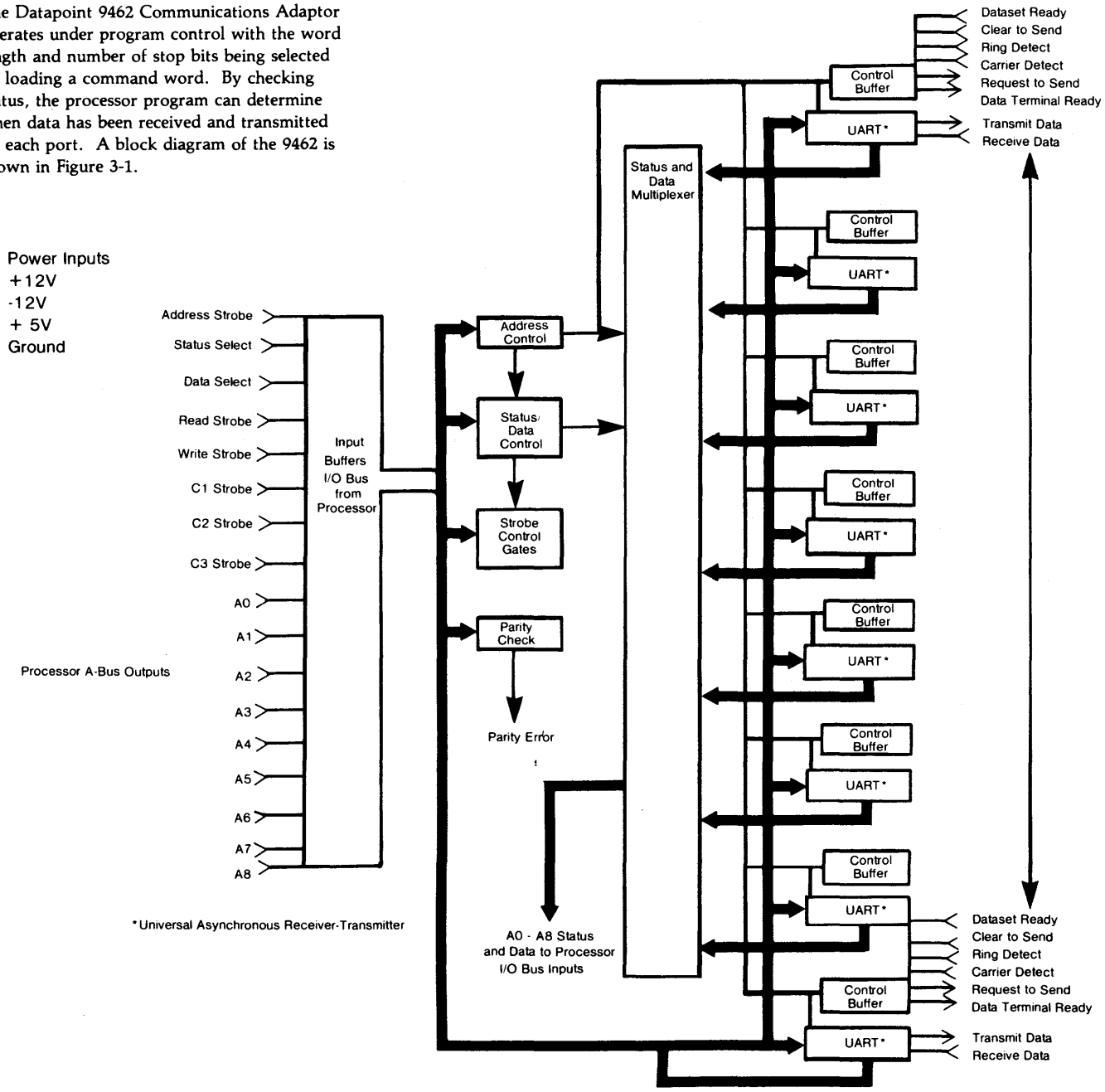
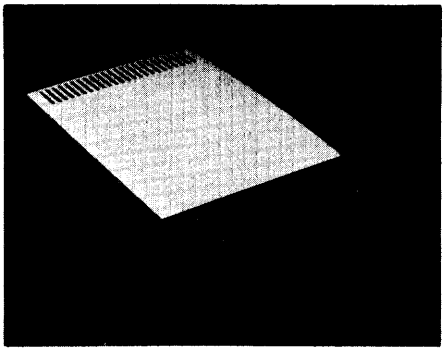


Figure 3-1



Multiple Port Communications Adaptor

9460/9462

3.2.3 Data and Status Input

Received characters or status of each port are transferred to the Datapoint processor by execution of an INPUT instruction while the Adaptor is addressed.

The Adaptor is placed in the data mode by execution of an EX DATA instruction while the Adaptor is addressed. In data mode, characters received by the currently selected port are transferred to the Datapoint processor when the INPUT instruction is executed.

INPUT, in the Data Mode, resets the RECEIVE READY status bit for the selected port until another character has been received by the port. Received data characters are always right-justified; that is, bit 1 of the received character always appears in bit 0 of the A-register after the INPUT command, regardless of the length of the received character.

The Adaptor is placed in status mode by addressing the Adaptor or by executing an EX STATUS instruction while the Adaptor is addressed. In this mode, Adaptor status is loaded into the A-register when INPUT is executed.

Two different types of status conditions can be monitored. One is the composite status of all eight ports (logical or status bits from each port), the other is the exact status of a particular addressed port. The 9462 is in the composite status mode after being addressed and remains in the composite status mode until a particular port is selected by executing an EX COM3 Command.

Control Word: EX COM3

7	6	5	4	3	2	1	0
Not Used					Select Port		

Thereafter, the status of only the selected port is present until the next EX ADR is executed.

The description of the individual status bits are as follows:

Status Word

A0 - - - - - - - - - - Transmit Ready
A1 - - - - - - - - - - Receive Ready
A2 - - - - - - - - - - Break Received
A3 - - - - - - - - - - Clear to send
A4 - - - - - - - - - - Not Used
A5 - - - - - - - - - - Ringing Present
A6 - - - - - - - - - - Carrier Present
A7 - - - - - - - - - - Data Set Ready (9462 Only)

BIT 0: Transmit Ready. A true (1) condition indicates that the one- character transmit buffer is now empty and a new character can be loaded.

BIT 1: Receive Ready. A true (1) condition indicates that the one-character buffer has received a character. If the Datapoint processor does not input the data prior to the completion of the next character, the new character will move into the buffer and the previous character will be lost.

BIT 2: Break Received. The presence of a true bit (1) in this position indicates that the received data had a space (0) condition during its stop pulse time.

BIT 3: Clear to Send. The true condition (1) of this bit indicates that the dataset is prepared to accept data for transmission. This bit is used only with an appropriate external modem or dataset.

BIT 4: Not Used

BIT 5: Ringing Present. When used with an appropriate dataset with necessary options, a true condition of this bit indicates that a ringing signal is being received at the dataset.

BIT 6: Carrier Present. A true (1) condition indicates that the external dataset shows that the main channel carrier frequency is being received.

BIT 7: Data Set Ready. A true (1) condition indicates that the external data set is in the "data" mode. (9462 only)

3.2.4 Data Control Command

Control of the Multiple Port Communications Adaptor is accomplished through use of a command word. The Datapoint processor "A" Register is loaded with the appropriate word and transmitted to the last addressed port by the EX COM1 instruction.

The control functions are as follows:

Control Word: EX COM1

A0 - - - - - - - - - - - - - - Request to Send
A3 A2 A1 - - - - - - - Not Used
A4 - - - - - - - - - - - - - - Data Terminal Ready
A7 A6 A5 - - - - - - - Not Used

BIT 0: Request to Send. A true (1) bit placed in this position turns on the transmitter carrier of an external data set indicating to the dataset that it must prepare for data transmission.

BIT 4: Data Terminal Ready. With this bit set true (1), the external dataset is advised that the Datapoint processor is ready for on-line communications.

3.2.5 Data Rate

The data rate is independently selected for each port by a wire jumper on the printed circuit board. The available baud rates are:

9460		9462	
110	300	110	150
220	600	220	300
440	1200	440	600
880	2400	880	1200
1760	4800	1760	2400
3520	9600	3520	4800
7040		7040	9600

9460*	9462
Port 7 - 110 baud Port 6 - 300 baud Ports 0-5 - 1200 baud	Ports 0-7 - 9600 baud

* NOTE: 9460 units shipped as refurb equipment have ports 0-7 strapped for 9600 baud operation.

3.2.6 Character Length Command

Transmit and receive character length and number of stop bits are determined by a control word which is transmitted to the last addressed port of the 9462 with an EX COM2 instruction.

The function of the control word is shown below:

Control Word: EX COM2

A1 A0 - - - - - - - - - - - Word Length
A2 - - - - - - - - - - - - - - Number of Stop Bits
A7 A6 A5 A4 A3- - Not Used

Continued....

Note that the transmit and receive character formats for each port are the same. Using the above control word, the following formats are available:

Transmit and Receive Character Formats

Control Bit Position 210	Start Bits	Information Bits	Stop Bits	Code Bit Positions 76543210
000	1	5	1	XXX54321
001	1	6	1	XX654321
010	1	7	1	X7654321
011	1	8	1	87654321
100	1	5	2	XXX54321
101	1	6	2	XX654321
110	1	7	2	X7654321
111	1	8	2	87654321

3.2.7 Data Output

Execution of the EX WRITE instruction while the Adaptor is addressed transfers the character in the A-register to the currently selected port for transmission.

EX WRITE should not be executed unless the TRANSMIT READY status bit for the port is true. This status bit will go false immediately after the character transfer and stay false until the port can accept another character for transmission.

4.0 Physical Description

The 9462 is mounted in an injection-molded high-strength plastic housing. Color and style are coordinated with the Datapoint processor. The rear of the housing is designed to attach directly to the rear of a Datapoint console. It can also be wall or surface mounted in any position. Figure 4-1 provides complete dimensions and shows the location of all connectors. Connectors J1 thru J8 correspond to ports 1 thru 8. Connectors J9 and J10 are the processor Input/Output System bus connectors.

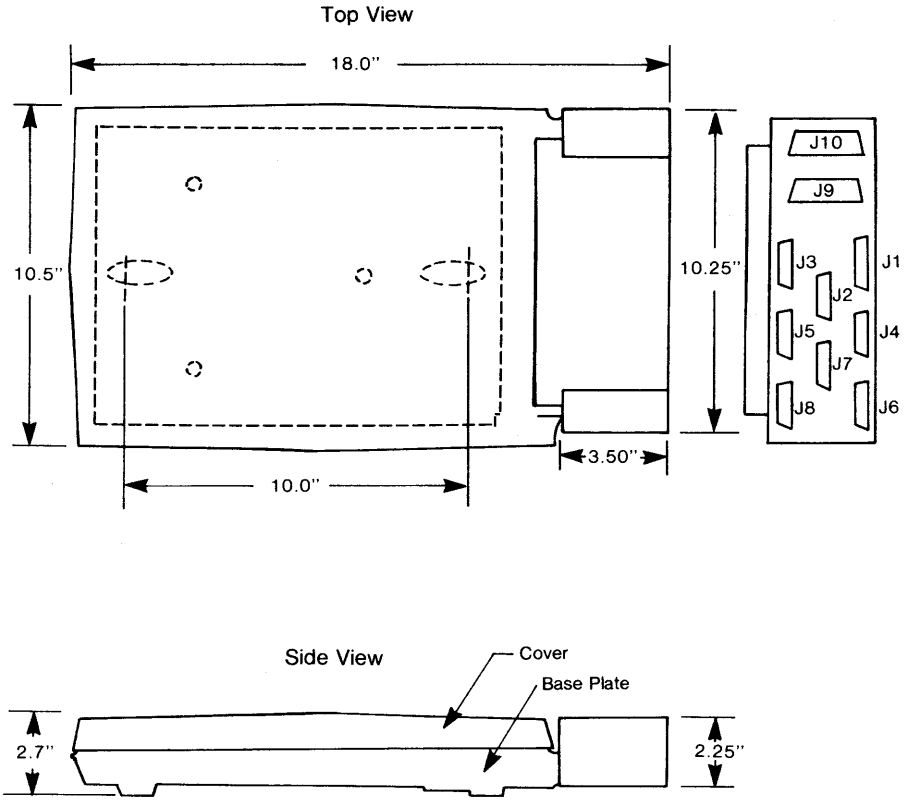


Figure 4.1

5.0 Environmental Requirements

The 9460/9462 is designed to operate without special considerations for heating or cooling. The operating range is 10 to 38 degrees Centigrade, 20 to 90% relative humidity without condensation. The unit generates approximately 102 BTU/Hour.

Warning: This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instructions manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

6.0 Interface Requirements

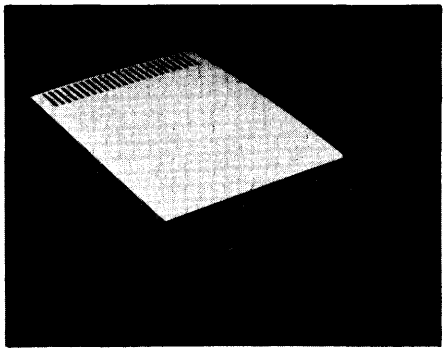
All port interfaces conform to EIA standard RS-232C. Each interface is provided via a standard 25 pin Amphenol 17-305-01 or equivalent connector with male pins. Pin assignments for each connector are as follows:

Pin	Function	Use
2	Transmitted Data	Output
3	Received Data	Input
4	Request to Send	Output
5	Clear to Send	Input
6	Data Set Ready	Input
7	Signal Ground	Connection
8	Received Line Signal Detector	Input
20	Data Terminal Ready	Output
22	Ring Indicator	Input
25	+5 Volts	--

Note that the physical port connectors 1-8 correspond to program addresses 0-7 respectively.

+5 volts is available on pin 25 of each port connector to provide a constant "ON" interface voltage or to power an external telegraph loop keyer such as the Datapoint 3110.

Cables and connectors used to connect the output ports of the 9462 adaptor to the external devices are shown in Table 6-1.



Multiple Port Communications Adaptor

9460/9462

Cable	Datapoint Cable Kit	Datapoint Connector Kit
9462 to 103A Modem	3403	9461
9462 to 013F or 202T Modem	3403	9461
9462 to Printer 9292	3453	3469
9462 to Comm Interface 9400	3403	3451
9462 to UDS-202C Modem	3403	9461
9462 to 9462	3452	2 ea. 41-0013 Conn.

Table 6-1

7.0 Options

No factory installed options are available for the 9462. The input/output address is normally set to 0151, but may be strapped to any other address in the field. In addition, the baud rate for each port may be field-strapped for any of the available baud rates.

8.0 Shipping List

The following items are shipped with each 9462:

Quantity	Item
1	9462 Multiple Port Communications Adaptor
1	I/O Cable
1	9462 Product Specification (Document No. 60171)

NOTE: This list is for reference only and is superceded by the current Datapoint Shipping List at time of shipment.

DATAPOINT